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Optical flow is the 2D motion that needs to be recovered from a video sequence. In this paper we study variational principles for the generation of interpolating sequences between two images. The basic assumption is that there exists an underlying video sequence that solves the optic flow equation and interpolates the two images. The numerical solution of the interpolation problem is reduced to the solution of a system of coupled partial differential equations. Some numerical simulations are presented. (Received September 19, 2000)